

CLAIMS

What is claimed is:

1. A bond tool for attaching a wire to a bond,
comprising:
 - 5 a guide portion for guiding the wire;
 - a grooving portion adjacent to the guide
portion for forming a groove in the bond; and
 - a staking portion adjacent to the grooving
portion for closing the groove, wherein the guide
10 portion, grooving portion, and staking portion are
all located on the bond tool.
2. The bond tool of Claim 1, wherein the guide
portion and the staking portion are approximately V-
15 shaped and the grooving portion is an approximately
inverted V-shape.
3. The bond tool of Claim 2, wherein the staking
portion has a shallower V-shape than the guide portion.
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4. The bond tool of Claim 1, wherein the wire is a
filament.
5. The bond tool of Claim 1, wherein the attaching
25 is with ultrasonic energy and pressure.
6. The bond tool of Claim 1, wherein the bond is an
aluminum bond.
- 30 7. A bond head for attaching a wire to a bond,
comprising:
 - a rotatable spool containing the wire;

a dancer arm assembly comprising an arm and a pulley connected to the arm, wherein the wire is laid out from the spool and along the pulley;
a bond tool for attaching the wire to the bond;
5 and
a clamp located between the pulley and the bond tool.

8. The bond head of Claim 7, wherein the bond tool
10 comprises a guide section, a grooving section, and a staking section.

9. The bond head of Claim 7, wherein the attaching
is with ultrasonic energy and pressure.
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10. The bond head of Claim 8, wherein the grooving
section forms a groove in the bond.

11. The bond head of Claim 10, wherein the staking
20 section closes the groove over the wire in the bond.

12. The bond head of Claim 7, wherein the clamp
comprises:

a first clamp half; and
25 an opposing second clamp half, wherein each clamp half has a first opening for entry of the wire, a second opening for exit of the wire, and a gripping region, with the entry and exit wider than the gripping region.

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13. The bond head of Claim 12, wherein the first and second clamp halves have opposing curved portions forming the first opening.

14. The bond head of Claim 12, wherein the first clamp half is fixed and the second clamp half is moveable.

5 15. A clamp for holding a wire from a spool, comprising:

 a first clamp arm having a curved first portion and a second portion, wherein the curved first portion is closer to the spool than the second
10 portion; and

 an opposing second clamp arm having a curved first portion and a second portion, wherein the curved first portion is closer to the spool than the second portion, and wherein an opening formed from
15 the two curved first portions is wider than a gripping region formed from the two second portions.

16. The clamp of Claim 15, wherein the first clamp arm is fixed and the second clamp arm is moveable.
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17. The clamp of Claim 15, wherein opposing sides of the first and second clamp arms diverge from the gripping region to a second opening opposite the first opening.
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18. A method of attaching a wire to a bond, comprising:

 forming a groove in the bond;
 placing the wire in the groove; and
30 closing the groove around the wire.

19. The method of Claim 18, wherein the forming is by ultrasonic energy and pressure.

20. The method of Claim 19, wherein the pressure is from pressing a bond tool with a grooving portion onto the bond.

5 21. The method of Claim 20, wherein the bond tool moves in an approximately perpendicular direction to the bond.

22. The method of Claim 18, wherein the closing is
10 by ultrasonic energy and pressure.

23. The method of Claim 22, wherein the pressure is from pressing a bond tool with a staking portion onto the bond.

15 24. The method of Claim 22, wherein the staking portion has an inverted V shape.

25. The method of Claim 18, wherein the forming,
20 placing, and closing is performed with a single pass of a bond head.

26. The method of Claim 18, wherein the wire is a filament.

25 27. The method of Claim 18, wherein the bond is an aluminum wire bond.